

VLHC PHYSICS/DETECTOR SUBGROUP

co-leaders: D. Denisov and S. Keller

talks given by: J. Womersley, T. Rizzo, R. Harris, V. Sirotenko, D. Hedin, W. Kilgore, L. Jones, J. Lykken, M. Albrow, R. Diebold

PHYSICS (guided by EHLQ)

- Goal: explore scales 10X larger than LHC \rightarrow Physics beyond the SM
- work/talks on W'/Z' , excited quark, lepto-quark, compositeness, strong WW scattering, Susy.
- will require luminosity of about $10^{35}/cm^2/s$ (certainly no less than 10^{34} , maybe 10^{36} !)
- note that for a given physics reach:
(10^{34} @ $\sqrt{s} = 200TeV$) better or equal to (10^{35} @ $\sqrt{s} = 100TeV$)
- $p\bar{p}$ interesting only if the luminosity is the same as pp

DETECTOR

- Challenging but seems feasible using known technologies:
 - $O(10^5)$ charged tracks/crossing: need to minimize bunch spacing to reduce interactions/crossing and curl up soft tracks
 - radiation damage up to Trad/year
 - muon measurement @ 10 TeV
- Higher Energy \rightarrow lower luminosity \rightarrow cheaper detector
 \rightarrow do not ignore detector cost in overall optimization!
- ALSO: interest in high rapidity/diffractive physics: much lower luminosity, different detector, few km long

THIS EFFORT WILL CONTINUE AFTER SNOWMASS, IF YOU WANT TO PARTICIPATE CONTACT US:

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